CHAPTER 4. Qualification Provisions

This section identifies the qualification provisions including the methods used to ensure that the requirements in Section 3 have been met.

COE Software will be qualified through formal validation tests of the SRS level requirements. The Qualification Methods applied to the software shall include Test (T), Demonstration (D), Analysis (A), and Inspection (I).

- **Test**: A qualification method that is carried out by operation of the item/component/interface (or some part of the computer software configuration item, etc.), and that relies on the collection and subsequent examination of data; the collection of data can be done using instrumentation or other special test equipment.
- **Demonstration**: A qualification method that is carried out by operation of the Item/component/interface (or some part of the software configuration item, etc.), and that relies on observable functional operation not requiring the use of elaborate instrumentation or special test equipment.
- **Analysis**: A qualification method that is carried out by the processing of accumulated data. An example of accumulated data is the compilation of data obtained from other qualification methods. Examples of the processing of accumulated data are interpretations or extrapolations made from the data. Examples are reduction, interpretation, or extrapolation of test results.
- **Inspection**: A qualification method that is carried out by visual examination, physical manipulation, or measurement to verify that the requirements have been satisfied. This may involve the visual examination of code, documentation, etc.

Special qualification methods may also be applied to the item/component/interface (or some part of the software configuration item, etc.), such as special tools, techniques, procedures, facilities, and acceptance limits.

4.1 Alert Services Qualification Provisions

All requirements associated with Alert Services will go through Formal Qualification Test (FQT).

Requirements 3.2.1.1 through 3.2.1.24 in Section AS 3.2.1 will go through Test. Requirements 3.2.2.1 through 3.2.2.25 in Section AS 3.2.2 will go through Demonstration.

4.1.1. Validation Levels

Software Development Testing will be performed in the Software development test environment unless otherwise specified or agreed to with PM GCCS. The software Development Test levels are Software Object Tests, Software Subsystem Tests and Software System Tests. Test documentation is maintained by the developers and testers in Software Development Folders (SDFs). Development Tests parallel the required formal tests allowing the Development Test software (Testware) to be reused for the Final Qualification Tests (FQTs).

4.1.1.1 Software Object Tests

Software Object Tests are the lowest level of test. Software Objects represent a complete software capability and have one or more defined public operation(s). "Software Object Test" is used instead of "Computer Software Component (CSC) Test" in MIL-STD-498. At this level, each software test examines off-nominal behavior and behavior at boundary conditions as well as the expected "nominal" behavior.

4.1.1.2 Software Subsystem Tests

Software Subsystem Tests verify the functional requirements for integrated software objects that implement one of the separate software products in the end system. These "Software Subsystem Tests" correspond to the "Computer Software Configuration Item (CSCI) Test" in MIL-STD-498.

4.1.1.3 Software System Tests

Software System Tests verify the functional requirements and operational behavior of the integrated software subsystems that implement the end system. The "Software System Tests" correspond to the "System Integration Test" as used in MIL-STD-498.

4.1.1.4 FQTs

FQTs are used to validate requirements stated at the software SRS level. The FQT is executed by personnel from an independent testing organization working with a configuration-controlled target system environment. FQTs are witnessed by government personnel and/or their authorized proxies.

4.1.2 Alert Services Responsibility for Qualification

Software testing will be performed by the provider of the software candidate objects. The degree of development testing vs. testing performed during productization and integration of existing software will be established by the software provider in concert with GCCS.

4.1.2.1 Development Tests:

Development testing is performed by the developers who implement the software products. These tests may be observed (informally) by government representatives. The developer Quality and Configuration Management organization certifies at the conclusion of development tests that the software is ready to be formally qualified.

4.1.2.2 Formal Qualification Tests:

FQTs must be performed by an independent test organization. These tests must be observed on a formal basis by government representatives. These tests will follow a successful test readiness review. FQTs may be incremental. software items failing the FQT are returned to the developer for correction.

4.1.2.3 Regression Tests:

Regression tests will be performed, as required, by the CS material developer to ensure that the software is (again) ready for formal testing when upgrades and/or bug fixes have been incorporated.

4.1.3 Alert Services Access to Software Developer Facilities

Government representatives may participate in design and code reviews and walk-throughs and in all testing activities. Such participation will be coordinated with the contractor who will grant access to contractor and subcontractor facilities.

4.3 Joint Mapping Tool Kit (JMTK) Qualifications Methods

GCCS/JMTK will be qualified through formal validation test of the SRS level requirements on GCCS COE specified hardware platforms and operating systems. The components will be tested by the

developers prior to their delivery to DMA. DMA will perform integration on the software provided by the participating Services in order to provide serviceable software to satisfy the GCCS MC&G requirements.

Only Demonstration is currently being projected for qualification.

4.4 Message Processing Qualification Provisions

The message processor and its message definition data tables require joint testing and approval by the Joint Interoperabilty Test Center (JITC) for USMTF standard compliance. Message Processing qualification methods are detailed in Table 1.

Requirement	Paragraph ID	Qualification
MESSAGE STATES AND MODES	3.1	Demo & Test
MESSAGE INBOUND PROCESSING	3.2.1	
INTERNAL ROUTING	3.2.1.1	Demo & Test
MESSAGE PARSER	3.2.1.2	Demo & Test
INFORMATION LABELING	3.2.1.3	Demo & Test
SRI PROCESSING	3.2.1.4	Demo & Test
MESSAGE PROFILING	3.2.1.5	Demo & Test
MESSAGE OUTBOUND PROCESSING	3.2.2	
MESSAGE GENERATION	3.2.2.1	Demo & Test
AUTO GENERATION	3.2.2.1.1	Demo & Test
INTERACTIVE GENERATION	3.2.2.1.2	Demo & Test
FORMAT SELECTION	3.2.2.1.3	Demo & Test
MESSAGE COORDINATION AND RELEASE	3.2.2.2	Demo & Test
MESSAGE PROCESSING SUPPORT SERVICES	3.2.3	
SYSTEM CONFIGURATION	3.2.3.1	
START UP	3.2.3.1.1	Demo & Test
TERMINATION	3.2.3.1.2	Demo & Test
ERROR HANDLING	3.2.3.2	Demo & Test
AUDIT	3.2.3.3	Demo & Test
RETROSPECTIVE SEARCH	3.2.3.4	Demo & Test
NORMALIZATION	3.2.3.5	Demo & Test
BOM TO COM CONVERSION	3.2.3.6	Demo & Test
MESSAGE DATA TABLES	3.2.3.7	Demo
MESSAGE VALIDATION	3.2.3.8	Demo & Test
MULTI SECTIONED MESSAGES	3.2.3.9	Demo & Test
MESSAGE ANNOTATION	3.2.3.10	Demo & Test
MESSAGE RETRANSMISSION	3.2.3.11	Demo
OPERATIONAL JOURNAL	3.2.3.12	Demo & Test

Table 1. Message Processing Qualification Methods